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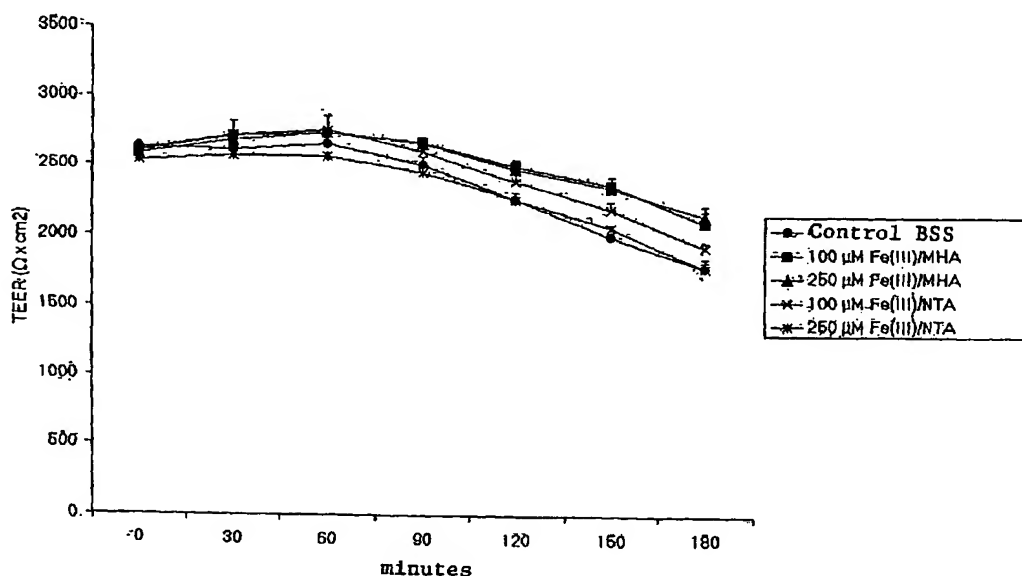
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[Continued on next page]

(54) Title: USE OF METAL CHELATES IN HUMAN OR ANIMAL FEEDING



(57) Abstract: The present invention relates to the use in human and animal nutrition (monogastric and polygastric animals) of known chelates of bivalent metal Mg, Ca, Mn, Co, Cu, Zn and Fe with methionine hydroxy analogue. The present invention further relates to a method for preparing new chelates with methionine hydroxy analogue, both in solid form with iron (II), vanadium (IV) and (V) and molybdenum (V) and (VI), and in liquid form in aqueous solution with iron (II) and (III) and chrome (III). Eventually, the present invention relates to the use of said new chelates, both in solid form with iron (II), vanadium (IV) and (V) and molybdenum (V) and (VI), and in liquid form in aqueous solution with iron (II) and (III) and chrome (III), in human and animal nutrition.

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/IT 03/00400

A. CLASSIFICATION OF SUBJECT MATTER		
IPC 7	A23L1/304	A23L1/305 A23K1/175 A23K1/16
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols)		
IPC 7 A23L A23K		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used)		
EPO-Internal, WPI Data, PAJ, FSTA, BIOSIS, CHEM ABS Data, COMPENDEX		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00/53032 A (CIRIBOLLA ANTONIO ; AGRISTUDIO S R L (IT)) 14 September 2000 (2000-09-14) cited in the application claims 1,2; example 1	1-11
Y	US 5 583 243 A (ABDEL-MONEM MAHMOUD M) 10 December 1996 (1996-12-10) example 1	1-11
Y	GB 1 575 577 A (ASHMEAD H) 24 September 1980 (1980-09-24) claims 1,2	1-11
X	WO 02/30216 A (HICKMAN DAN S ; BEVANS BASIL D (US); BUNTING L DWAIN (US)) 18 April 2002 (2002-04-18) See whole document	22-25
-/-		
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C. <input checked="" type="checkbox"/> Patent family members are listed in annex.		
* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search		Date of mailing of the international search report
27 February 2004		12. 03. 2004
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer Rooney, K

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p> DATABASE WPI Section Ch, Week 200142 Derwent Publications Ltd., London, GB; Class D13, AN 2001-390759 XP002271792 & CN 1 290 488 A (HUANG Y) 11 April 2001 (2001-04-11) abstract ----- </p>	22-25

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IT 03/00400

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☒ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
1-11, 22-25
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

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INTERNATIONAL SEARCH REPORT

International Application No. PCT/IT 03 00400

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-11

Preparing a metal chelate having the formula $(CH_3SCH_2CH_2CH(OH)COO)_2M \cdot nH_2O$ and use in human and animal nutrition where M is a bivalent metal cation chosen from the group of Mg Ca Mn Co Cu Zn and Fe and n is the number of complexed water molecules.

2. claims: 12-16

Method for preparing a vanadium (V) complexes with hydroxy methionine analog and the usage thereof in human and animal nutrition.

3. claims: 17-21

Methods for preparing molybdenum (VI) complexes with methionine hydroxy analog and the use thereof in human and animal nutrition

4. claims: 22-25

Stable aqueous solution of iron (iii) or chrome (iii) complexes with two or more than two molecules of hydroxy methionine analog, method for its preparation and the use thereof.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IT 03/00400

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0053032	A	14-09-2000	IT RE990028 A1 05-09-2000
			AT 228775 T 15-12-2002
			AU 757308 B2 13-02-2003
			AU 5192099 A 28-09-2000
			CA 2347152 A1 14-09-2000
			CN 1333655 T 30-01-2002
			DE 69904370 D1 16-01-2003
			DE 69904370 T2 09-10-2003
			DK 1158869 T3 03-03-2003
			EP 1158869 A1 05-12-2001
			ES 2189458 T3 01-07-2003
			WO 0053032 A1 14-09-2000
			NZ 511152 A 28-11-2003
			PT 1158869 T 31-03-2003
			SI 1158869 T1 30-04-2003
			US 6461664 B1 08-10-2002
US 5583243	A	10-12-1996	AT 195512 T 15-09-2000
			AU 694661 B2 23-07-1998
			AU 5796696 A 29-11-1996
			CA 2221153 A1 21-11-1996
			DE 69609838 D1 21-09-2000
			DE 69609838 T2 08-02-2001
			DK 840723 T3 20-11-2000
			EP 0840723 A1 13-05-1998
			ES 2150670 T3 01-12-2000
			GR 3034670 T3 31-01-2001
			JP 3087079 B2 11-09-2000
			JP 11501658 T 09-02-1999
			PT 840723 T 28-02-2001
			WO 9636598 A1 21-11-1996
GB 1575577	A	24-09-1980	AU 520654 B2 18-02-1982
			AU 2433177 A 26-10-1978
			CA 1088425 A1 28-10-1980
			DE 2755709 A1 22-06-1978
			JP 1024768 B 15-05-1989
			JP 1541073 C 31-01-1990
			JP 53079009 A 13-07-1978
			NZ 183858 A 25-10-1979
WO 0230216	A	18-04-2002	US 6403143 B1 11-06-2002
			AU 9674901 A 22-04-2002
			CA 2425251 A1 18-04-2002
			WO 0230216 A2 18-04-2002
CN 1290488	A	11-04-2001	NONE